

Docket No. ST 2623.01 US
USSN: 09/495,552

PATENT
Art Unit: 2653

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-22 (CANCELLED)

Claim 23 (CURRENTLY AMENDED) ~~[[The]]~~ A near-field optical apparatus ~~[[of claim 22]]~~ comprising a monolithic semiconductor substrate, said semiconductor substrate including at least one laser region, said semiconductor substrate including a slider region, said laser region integral to said slider region, said integral laser region and slider region defining a monolithic optical head, wherein the slider region is carried out by depositing an air bearing surface layer on a portion of said semiconductor substrate, wherein said monolithic semiconductor substrate further comprises:

- (a) a first conductivity-type semiconductor layer adjacent a first side of said semiconductor substrate;
- (b) an first conductivity-type distributed Bragg reflector mirror stack adjacent said first conductivity-type semiconductor layer;
- (c) a multiple quantum well active region layer adjacent said first conductivity-type distributed Bragg reflector mirror stack;
- (d) a second conductivity-type distributed Bragg reflector mirror stack adjacent said multiple quantum well active region layer;
- (e) an insulating layer adjacent said second conductivity-type distributed Bragg reflector mirror stack; and
- (f) a metal layer adjacent said insulating layer.

Docket No. ST 2623.01 US
USSN: 09/495,552

PATENT
Art Unit: 2653

Claim 24 (ORIGINAL) The near-field optical apparatus of claim 23, wherein said optical head further comprising:

(a) a second side electrical contact positioned adjacent said second conductivity-type distributed Bragg reflector mirror stack on a second side of said semiconductor substrate;

(b) an first side electrical contact positioned adjacent said first conductivity-type semiconductor layer on a first side of said semiconductor substrate;

(c) said second side electrical contact and said first side electrical contact defining a laser mode for said semiconductor laser.

Claims 25-26 (CANCELLED)

Claim 27 (CURRENTLY AMENDED) The near-field optical apparatus [[of claim 26]] comprising a monolithic semiconductor substrate, said semiconductor substrate including at least one laser region, said semiconductor substrate including a slider region, said laser region integral to said slider region, said integral laser region and slider region defining a monolithic optical head, wherein the slider region is carried out by depositing an air bearing surface layer on a portion of said semiconductor substrate, wherein said slider region includes an air bearing surface comprising a protective layer, said protective layer comprises a material selected from the group consisting of metal nitride, metal carbide, metal, metal alloy, Group III nitride, Group VI nitride, Group III carbide, Group IV carbide, diamond, diamond-like carbon, hydrogenated carbon, fluoride, and fluoropolymer.

Claim 28 (PREVIOUSLY PRESENTED) The near-field optical apparatus of claim 24, wherein said second side electrical contact and said first side electrical contact are electrically accessible from a side of said optical head apparatus which is remote from said air bearing surface.

Docket No. ST 2623.01 US
USSN: 09/495,552

PATENT
Art Unit: 2653

Claim 29 (ORIGINAL) The near-field optical apparatus of claim 24, wherein said second side electrical contact and said first side electrical contact are electrically accessible from said first side of said semiconductor substrate.

Claim 30 (ORIGINAL) The near-field optical apparatus of claim 24, wherein said first side electrical contact is electrically accessible from said first side of said semiconductor substrate, and said second side electrical contact is electrically accessible from a side of said semiconductor substrate which is substantially normal to said first side of said semiconductor substrate.

Claim 31 (ORIGINAL) The near-field optical apparatus of claim 24, wherein said second side electrical contact further comprises a conductive via, said conductive via extending through said first conductivity-type semiconductor layer, said first conductivity-type distributed Bragg reflector mirror stack, said multiple quantum well active region layer, and said second conductivity-type distributed Bragg reflector mirror stack, said via communicating with said first side of said semiconductor substrate.

Claims 32-36 (CANCELLED)

Claim 37 (CURRENTLY AMENDED) [[The]] An integrated solid state laser and slider apparatus [[of claim 36]] comprising a single, monolithic semiconductor substrate, said monolithic semiconductor substrate including a slider portion having an air bearing surface layer deposited thereon, said semiconductor substrate including at least one laser portion having an emission face, said emission face substantially coplanar with said air bearing surface layer, wherein said air bearing surface layer comprises a protective layer, said protective layer [[comprises]] comprising a material selected from the group consisting of metal

Docket No. ST 2623.01 US
USSN: 09/495,552

PATENT
Art Unit: 2653

nitride, metal carbide, metal, metal alloy, Group III nitride, Group IV nitride, Group III carbide, Group IV carbide, diamond, diamond-like carbon, hydrogenated carbon, fluoride, and fluoropolymer.

Claim 38 (CANCELLED)

Claim 39 (PREVIOUSLY PRESENTED) The apparatus of claim 37, wherein said laser has an output wavelength λ , and said aperture has a width w such that $w < \lambda$.

Claim 40 (CURRENTLY AMENDED) The apparatus of claim ~~[[38]]~~ 39, wherein $w < \lambda/2$.

Claim 41 (CANCELLED)